Analytical Biochemistry

An International Journal

EDITOR: *Alvin Nason*

ADVISORY BOARD:

Gary Ackers
Norman G. Anderson
Eraldo Antonini
Gilbert Ashwell
H. A. Barker
Samuel P. Bessman
Simon Black
Robert M. Bock
Robert L. Bowman
Ludwig Brand
A. E. Braunstein
Robert H. Burris
Melvin Calvin
Andreas Chrambach
Frank Eisenberg, Jr.
Jacques R. Fresco
Victor Ginsburg
I. C. Gunsalus
Harlyn O. Halvorson
Osamu Hayaishi
Edward C. Heath
Leslie Hellerman
C. H. W. Hirs
Evan C. Horning
Rollin D. Hotchkiss
Walter L. Hughes
William B. Jakoby
Nathan O. Kaplan
Ephraim Katchalski
Irving Klotz
Luis F. Leloir
Oliver H. Lowry
Feodor Lynen
Brian J. McCarthy
Donald McCormick
William D. McElroy
Vincent Massey
Alan H. Mehler
Bruce Merrifield
Marshall Nirenberg
Kazuo Okunuki
Sarah Ratner
Alexander Rich
David Rodbard
Gerhard Schmidt
Michael Sela
Esmond E. Snell
Sol Spiegelman
Paul K. Stumpf
Charles A. Thomas, Jr.
Sidney Udenfriend
Bert L. Vallee
Samuel B. Weiss
Theodor Wieland
George Wolf
W. A. Wood
Lemuel D. Wright
David A. Yphantis

VOLUME 64
1975

ACADEMIC PRESS
New York and London

A Subsidiary of Harcourt Brace Jovanovich, Publishers

Copyright © 1975 by Academic Press, Inc.

All Rights Reserved

No part of this publication may be reproduced or transmitted in any form, or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owner.

CONTENTS OF VOLUME 64

NUMBER 1, MARCH 1975

T. I. BURTSEVA, L. I. GLEBKO, AND YU. S. OVODOV. A Method for Separate Quantitative Determination of 2-Keto-3-Deoxy-Octonate and 3,6-Dideoxy-hexoses in Mixtures 1

M. G. CARNES AND M. L. BRENNER. A Rapid, Highly Efficient Trapping System for the Collection of 3-Indoleacetic Acid from a Gas Chromatography Column 5

K. G. BRAUND, P. GHOSH, T. K. F. TAYLOR, AND L. H. LARSEN. The Identification of Connective Tissue Hexosamines Using a Combination of Gas-Liquid Chromatographic and Colorimetric Procedures 10

M. R. V. MURTHY AND THÉRÈSE LEROUX. Determination of Protein in Extracts Containing Interfering Substances and in Radioactive Samples Following Scintillation Counting 18

YOSHIO HATAE AND AKIRA MAKITA. Colorimetric Determination of Hyaluronate Degraded by *Streptomyces* Hyaluronidase 30

P. E. B. REILLY. Use of Reverse Isotope Dilution Analysis to Determine Blood Plasma L(+)-^{14}C-Lactate Specific Radioactivity 37

VLADIMÍR KOVÁČIK AND PAVOL KOVÁČ. Mass Spectrometry of Uronic Acid Derivatives. Part V. Fragmentation of Methyl Derivatives of Methyl 4-Deoxy-β-L-Threo-Hex-4-Enopyranosiduronic-Acid 45

JENS B. CARLSEN. Thiol Group Determination in Proteins by Flameless Atomic Absorption Spectrometry of Mercury 53

LAURA J. CRANE AND DAVID L. MILLER. A Solid-Phase Radioimmunoassay for Fibrinogen 60

R. N. GOLDBERG, E. J. PROSEN, B. R. STAPLES, R. N. BOYD, G. T. ARMSTRONG, R. L. BERGER, AND D. S. YOUNG. Heat Measurements Applied to Biochemical Analysis: Glucose in Human Serum 68

JOHANN SONNENBICHLER, ISOLDE ZETL AND FAUSTO MACHICAO. A Method for Quantitative Determinations of Nonhistone Proteins in Chromatin. . . 74

ANNE H. DATKO, JOHN GIOVANELLI, AND S. HARVEY MUDD. Preparation of Cystathionine Sulfoxide and Sulfone and Some Properties Relating to Their Differentiation 80

IRENE WILLIAMS AND LEONARD FRANK. Improved Chemical Synthesis and Enzymatic Assay of Δ^1-Pyrroline-5-Carboxylic Acid 85

F. ADDEO, A. MALORNI, AND G. MARINO. Analysis of Dansyl-Amides in Mixtures by Mass Spectrometry, Using Metastable Defocusing 98

R. MITRA, R. D. GROSS, AND J. E. VARNER. An Intact Tissue Assay for Enzymes that Labilize C—H Bonds 102

S. LOVETT. The Determination of the Activity of Immobilised Amidases Using an Ammonia-Sensitive Glass Electrode 110

G. DAVID MCCOY AND KENNETH A. DOEG. A Simplified Assay for Phosphoenolpyruvate 115

KARL LI AND ALAP R. SUBRAMANIAN. Selective Separation Procedure for Determination of Ribosomal Proteins L7 and L12 121

STEVEN GOLDSTEIN AND MELVIN BLECHER. The Spectrophotometric Assay for Polyethoxy Nonionic Detergents in Membrane Extracts: A Critique . . 130

J. R. DULLEY AND P. A. GRIEVE. A Simple Technique for Eliminating Interference by Detergents in the Lowry Method of Protein Determination . . 136

EDWARD BERGER. A Simple Method for Determining Specific Esterase Activity in Tissue Extracts 142

J. E. SMITH, J. D. LANE, P. A. SHEA, W. J. MCBRIDE, AND M. H. APRISON. A Method for Concurrent Measurement of Picomole Quantities of Acetylcholine, Choline, Dopamine, Norepinephrine, Serotonin, 5-Hydroxytryptophan, 5-Hydroxyindoleacetic Acid, Tryptophan, Tyrosine, Glycine, Aspartate, Glutamate, Alanine, and Gamma-Aminobutyric Acid in Single Tissue Samples from Different Areas of Rat Central Nervous System 149

FRED V. PLAPP, LOWELL TILZER, LINDA C. HAYES, AND MASAHIRO CHIGA. A Rapid Method for Isolation of Peptidyl tRNA from Liver Polysomes . . 170

M. I. TOURKOV, G. I. KLIMOVA, G. A. DAVYDOVA, K. M. YERMOLAEV, AND V. Z. GORKIN. Colorimetric Estimation of Diamine Oxidase Activity . . 177

DONALD M. KIRSCHENBAUM. Molar Absorptivity and $A_{cm}^{1\%}$ Values for Proteins at Selected Wavelengths of the Ultraviolet and Visible Regions. X . . 186

KAREL GROHMANN AND R. L. SINSHEIMER. Separation of Oligonucleotides by Thin-Layer Electrophoresis 214

IRA S. ROSENFELD, GIULIANO D'AGNOLO, AND P. ROY VAGELOS. Identification and Quantitation of Acyl Thioesters by Thin-Layer Chromatography of Hydroxamic Acid Derivatives 221

CARL D. JOHNSON AND RICHARD L. RUSSELL. A Rapid, Simple Radiometric Assay for Cholinesterase, Suitable for Multiple Determinations . . . 229

GABOR L. IGLOI AND GEOFFREY R. PENZER. Automatic Fluorescence Titrations and Their Interpretation 239

L. B. SANDBERG, E. BRUENGER, AND E. G. CLEARY. Tropoelastin Purification: Improvements Using Enzyme Inhibitors 249

B. L. RASMUSSEN, E. BRUENGER, AND L. B. SANDBERG. A New Method for Purification of Mature Elastin 255

HUGO E. GALLO-TORRES, JACQUELINE LUDORF, AND O. NEAL MILLER. An Ultramicrotechnique for the Detection and Separation of Small Molecular Weight Peptides from Amino Acids 260

A. HIROTOSHI NISHIKAWA AND PASCAL BAILON. Affinity Purification Methods. Improved Procedures for Cyanogen Bromide Reaction on Agarose . . 268

SHORT COMMUNICATIONS

C. J. ARGOUDELIS AND J. TOBIAS. The Determination of Small Quantities of Choline Reineckate 276

ROGER A. DAVIS, J. PHILIP SHOWALTER, AND FRED KERN, JR. A Simple Method for Trapping and Measuring Expired $^{14}CO_2$ 281

STEPHEN L. SNYDER AND PHILIP Z. SOBOCINSKI. An Improved 2,4,6-Trinitrobenzenesulfonic Acid Method for the Determination of Amines . 284

WENDY F. BOSS, CHARLES J. KELLEY, AND FRANK R. LANDSBERGER. A Novel Synthesis of Spin Label Derivatives of Phosphatidylcholine . . 289

M. BODDIN, H. J. HILDERSON, A. LAGROU, AND W. DIERICK. Preparative Isoelectric Focusing: Elution of the Gradient Without Interrupting the Electrical Field 293

WILLIAM R. A. OSBORNE AND RICHARD E. TASHIAN. An Improved Method for the Purification of Carbonic Anhydrase Isozymes by Affinity Chromatography 297

PETER J. LARGE AND HAZEL MCDOUGALL. An Enzymic Method for the Microestimation of Trimethylamine 304

S. MAPELLI AND G. TORTI. 2′:3′ Cyclic Nucleotides Analysis on QAE-Sephadex A-25 311

MARYELLEN C. SPARKES, MICHOL L. CRIST, AND ROBERT S. SPARKES. High Sensitivity of Phenolphthalein Monophosphate in Detecting Acid Phosphatase Isoenzymes 316

ERRATUM 319

NUMBER 2, APRIL 1975

ALBERTO BERNARDI AND CLAIRE GAILLARD. A Fast Method for the Determination of 5′ Terminal Dinucleotides of DNA Fragments 321

K. T. WHEELER, J. D. LINN, R. FRANKLIN, AND E. L. PAUTLER. Characterization of Large Mammalian DNA Species Sedimented in a Reorienting Zonal Rotor 329

L. WARREN. An Assay for Free L-Fucose in the Presence of the Bound Sugar . 343

GERARD J. MULDER. A Method for Comparison of the Properties of UDP Glucuronyltransferase and Phenolsulfotransferase from Rat Liver with a Joint Substrate 350

A. HÜTTERMANN AND U. GUNTERMANN. Metrizamide in D_2O—A Novel Solute for the Separation of Labeled and Unlabeled Proteins by Equilibrium Density Gradient Centrifugation 360

MOSE ROSSI AND BENITA DE PETROCELLIS. A Rapid Method for Determination of Ribonucleotide Reductase Activity 367

PAK HOO CHAN AND W. Z. HASSID. One Step Purification of D-Galactose and L-Arabinose Kinases from *Phaseolus aureus* Seedlings by ATP-Sepharose Affinity Chromatography 372

HOWARD BUSSEY, RONALD A. RIMERMAN, AND G. WESLEY HATFIELD. Specific Ion Mediated Chromatography of Glycoproteins and Neutral Polysaccharides on Substituted Agarose Gels 380

MICHAEL H. JOSEPH AND JOHN HALLIDAY. A Dansylation Microassay for Some Amino Acids in Brain 389

R. F. BAYFIELD. Simplified Methods for the Examination of Liver Lipids. I. Determination of Vitamin A in Liver using a Direct Solvent Extraction Technique 403

AMNON GONENNE AND JACOB LEBOWITZ. Estimation of Molecular Weights of Small Proteins on Polyacrylamide Gel Electrophoresis 414

AMNON GONENNE AND JACOB LEBOWITZ. Disc Electrophoretic Studies of Hemoglobin Dissociation by *p*-Hydroxymercury Benzoate 425

ANDREW M. TOMETSKO AND ESTHER VOGELSTEIN. Quality Control During Peptide Synthesis. I. Quantitative Monitoring of Resin Bound Amines . . 438

ROBERT K. DINELLO. Analytical Chromatography of Hemins on Silica Gel . 444

HERMAN YEGER AND MURRAY FREEDMAN. A Compact Apparatus for Vertical Gel Slab Isoelectric Focusing: Resolution of Rabbit Anti-Pneumococcal Polysaccharide Antibodies 450

ROBERT W. FARMER, CHARLES A. HARRINGTON, AND DOUGLASS H. BROWN. A Simple Radioimmunoassay for 3′,5′, Cyclic Adenosine Monophosphate. . 455

ULRICH MELCHER. The Purification of β-Galactosidase-Specific Polysomes by Affinity Chromatography 461

ERIK FRIES AND STELLAN HJERTÉN. Scanning of Polyacrylamide Gel Electrophoresis Columns for Detection of Unstained Protein Zones and for Their Localization Relative to Enzyme Activities 466

STEVEN T. CASE AND ROBERT F. BAKER. Investigation into the Use of *Aspergillus oryzae* S_1 Nuclease in the Presence of Solvents Which Destabilize

or Prevent DNA Secondary Structure: Formaldehyde, Formamide, and Glyoxal 477
PHILLIP W. ALBRO. Determination of Protein in Preparations of Microsomes . 485
MIEKO KUBOTA, NORIKO TAKAHASHI, KASHIKO GOTO, AND TAKASHI MURACHI. A Rapid and Quantitative Determination of Amino Acid Phenylthiohydantoins by Direct Densitometry on Thin-Layer Chromatogram 494
RICHARD A. MCPHERSON AND ALFRED ZETTNER. A Mathematical Analysis of the Incubation Time in Competitive Binding Systems 501
A. H. REISNER, PATTY NEMES, AND CAROLYN BUCHOLTZ. The Use of Coomassie Brilliant Blue G250 Perchloric Acid Solution for Staining in Electrophoresis and Isoelectric Focusing on Polyacrylamide Gels 509
VERGINE MADELIAN AND WILLIAM A. WARREN. Affinity Chromatography of Creatine Kinase 517
K. D. NEAME. A Simple Method for the Elimination of Chemiluminescence in the Liquid Scintillation Counting of Alkaline Protein Digests 521
GERHARD BAUMANN AND ANDREAS CHRAMBACH. Lack of Interaction between Hormonal Proteins and Synthetic Carrier Ampholytes (Ampholine) . . 530
THEODORE W. MUNNS AND HAROLD F. SIMS. Determination of the Extent of Methylation of tRNA 537
RICHARD B. NEEDLEMAN AND ALEXANDER TZAGOLOFF. Breakage of Yeast: A Method for Processing Multiple Samples 545
ALAN C. HERMAN AND THOMAS C. VANAMAN. Microanalytical and Preparative Peptide Separations with a Modified Technicon Autoanalyzer . . . 550
PATRICIA W. SPENCER, JOHN S. TITUS, AND RICHARD D. SPENCER. Direct Fluorimetric Assay for Proteolytic Activity Against Intact Proteins . . 556
B. I. COHEN, R. F. RAICHT, G. SALEN, AND E. H. MOSBACH: An Improved Method for the Isolation, Quantitation, and Identification of Bile Acids in Rat Feces 567
HELEN C. CAMPUZANO, JAMES E. WILKERSON, AND STEVEN M. HORVATH. Fluorometric Analysis of Epinephrine and Norepinephrine 578
ROGER W. GIESE AND JAMES F. RIORDAN. Nitrotyrosine Internal Standard for Amino Acid Analysis 588
ANNE M. HEACOCK, IRENE H. WILLIAMS, LEONARD H. FRANK, AND ELIJAH ADAMS. Δ'-Pyrroline-5-carboxylate and Δ^1-Pyrroline-3-hydroxy-5-carboxylate: Chromatoyrophy on the Amino Acid Analyzer 593
OSAMU SHIMOMURA AND FRANK H. JOHNSON. Influence of Buffer System and pH on the Amount of Oxygen Exchanged Between Solvent H_2O and the CO_2 Produced in Aerobic Oxidation of *Cypridina* Luciferin Catalyzed by *Cypridina* Luciferase 601

SHORT COMMUNICATIONS

ALEX K. EVERS, JACK S. WOLPERT, AND MARY LOU ERNST-FONBERG. An Improved Method for Assay of Carboxylation Enzymes 606
JEFFREY F. MCKELVY. A Rapid and Quantitative Procedure for the Purification of Picomole Quantities of Salt-Free Synthetic [^{3}H-Pro] Thyrotropin Releasing Hormone 609
NELSON SLAVIK, LANA STOLARKSY, AND CHARLES L. HERSHBERGER. Probability Graphs Resolve Components with Buoyant-Density Differences of 0.001 g/cm^3 in Equilibrium Density Gradients 615
DONALD W. RENN AND ERIC EVANS. Use of Heteropoly Acids as Immunological Precipitin Brighteners 620

MARY KAY GENTRY AND RAY A. OLSSON. A Simple, Specific, Radioisotopic Assay for 5′-Nucleotidase 624
P. D. J. WEITZMAN. A Critical Reexamination of the Reaction of Sulfite with DTNB 628
T. J. WINCEK AND F. W. SWEAT. The Assay of Adenyl Cyclase by Sequential Dowex-Alumina Chromatography 631

AUTHOR INDEX 636

Subject Index for Volume 64 will appear in the December issue as part of a cumulative index for the year 1975.